REMARKS

The Applicants disagree with the Examiner's rejections; however, in the interest of expediting prosecution of these claims, the Applicants amend them accordingly. In view of the following remarks, the Examiner is requested to allow claims 1-6, 25-29 and 34, the only claims pending and under examination in this application.

Claim 1 has been amended to recite "containing at least one UNA nucleotide and which hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase". Support for this amendment can be found in the specification, particularly in page 13, lines 4-8; page 14, lines 19-21; and page 8, line 28 to page 9, line 7. Claim 28 has been amended to include the method steps of claim 7. Support for this amendment and new Claim 34 is found in original claims 7, 15 and 28 as originally filed.

Claims 32 and 33 are cancelled without prejudice.

As no new matter has been added by way of these amendments, entry thereof by the Examiner is respectfully requested.

Formal Drawings

Applicants thank the Examiner for accepting the drawings as filed with the instant application on April 20, 2004.

Claim Rejections 35 U.S.C. § 112, second paragraph

Claims 1-6 and 25-29 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner rejects claim 1-6 and 25-29 over the recitation of the phrase "CpG unstructured nucleic acid" in that the Examiner alleges that the term "at least partially complementary", in the definition of "CpG UNA oligonucleotide" in the specification, is indefinite. The Applicants respectfully traverse this rejection.

Amended claim 1 contains the recitation that: the CpG unstructured nucleic acid (UNA) oligonucleotide that "hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase".

The Applicants believe the Examiner's concerns are addressed and respectfully request Examiner withdraw the rejection.

The Examiner rejects claims 5, 6 and 27 over the recitation of the phrase "an array of features" in that the Examiner alleges that the term is unclear as it is not clearly defined in the specification and there is no art recognized definition for the phrase. The Applicants respectfully traverse this rejection.

The specification provides a clear definition of "array" in page 6, lines 15-20 and a clear definition of "feature" in page 6, line 21 to page 7, line 1. As such the phrase "an array of features" is readily apparent to one of ordinary skill in the art.

The Applicants believe the Examiner's concerns are addressed. Withdrawal of this rejection is respectfully requested.

The Examiner rejects claim 28 in that the Examiner alleges claim 28 contains an improper dependence of a claim to a product from a claim to a method. The Applicants respectfully traverse this rejection.

Amended claim 28 is no longer depends from another claim. Since claim 28 no longer depends from another claim, the Applicants respectfully request Examiner reconsider and withdraw the rejection.

Claim Rejections – 35 U.S.C. § 102

Claims 1 and 3-4 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Kutyavin *et al.* (USPN 5,912,340).

According to the MPEP, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. See MPEP 2131.

The rejected claims recite a CpG UNA oligonucleotidee that includes the following element: "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**".

Kutyavin *et al.* do not disclose an oligonucleotide that "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**". Instead, Kutyavin *et al.* merely disclose oligonucletides that contain modified nucleotides.

In view of the foregoing discussion, the Applicants submit that Kutvavin files to disclose each and element of the rejected claims. As such, Kutvavin cannot anticipate claims 1 and 3-4, and this rejection may be withdrawn.

Withdrawal of this rejection is respectfully requested.

Claim Rejections – 35 U.S.C. § 103

Claim 2 has been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kutyavin *et al.* in view of Laird *et al.* (USPN 6,331,393).

According to the MPEP § 706.02 (j), to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The rejected claims recite a method that includes the following element: "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**".

For the reasons set forth above, Kutyavin *et al.* do not teach or suggest the element of "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**". The disclosure of Laird *et al.* does not overcome the deficiency of Kutyavin *et al.* as Laird *et al.* likewise do not teach or suggest this element, and, as such, this combination of references cannot render the claims obvious.

Furthermore, there is no suggestion or motivation for combining the disclosures of Kutyavin *et al.* and Laird *et al.* The modified bases disclosed by Kutyavin *et al.* are for the purpose of increasing hybridization of the oligonucleotides to their intended target by reducing secondary structure formation by the oligonucleotides. Laird *et al.* do not disclose that the oligonucleotides used have any need for reduction of secondary structure formation. For this reason, there is no suggestion or motivation to combine the disclosures of Kutyavin *et al.* and Laird *et al.*

Finally, combining the disclosures of Kutyavin *et al.* and Laird *et al.* would render the prior art unsatisfactory for its intended purpose. This is because Laird *et al.* disclose a process that includes treating genomic DNA with sodium bisulfite to

convert all unmethylated cytosines in the DNA to uracil by deamination, but which leaves the methylated cytosine residues intact (see Abstract and Figs. 1 and 2). Due to this treatment, Laird *et al.* disclose using primers in which adenines are substituted in place of guanines and thymines in place of cytosines, as follows:

> "In the case of fully "unmethylated" (complementary to modified unmethylated nucleic acid strands) primer sets, the anti-sense primers **contain adenosine residues ("As") in place of guanosine residues ("Gs")** in the corresponding (-) strand sequence. These substituted As in the anti-sense primer will be complementary to the uracil and thymidine residues ("Us" and "Ts") in the corresponding (+) strand region resulting from bisulfite modification of unmethylated C residues ("Cs") and subsequent amplification. The sense primers, in this case, are preferably designed to be complementary to anti-sense primer extension products, and **contain Ts in place of unmethylated Cs** in the corresponding (+) strand sequence. These substituted Ts in the sense primer will be complementary to the As, incorporated in the anti-sense primer extension products at positions complementary to modified Cs (Us) in the original (+) strand." (col. 12, line 66 to col. 13, line 14; emphasis added).

According to MPEP §2143.01[1], it is impermissible to use such logic to establish a *prima facie* case of obviousness.

At best, the combination of Kutyavin *et al.* and Laird *et al.* suggest oligonucletides that contain nucleotides with the modified bases disclosed by Kutyavin *et al.* and the guanines substituted with adenines and the cytosines substituted with thymines. Such oligonucleotides are not suitable for hybridizing to their intended targets for Kutyavin *et al.* as the sequences of such oligonucleotides would be less complementary to their intended targets. This is *not* what is being claimed.

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[1] V. THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) . . . .

For the reasons set forth above, Kutyavin *et al.* in view of Laird *et al.* do not render claim 2 obvious. Thus, the Applicant respectfully requests the Examiner reconsider and withdraw this rejection over Kutyavin *et al.* in view Laird *et al.*

Claims 5-6 and 26-28 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kutyavin *et al.* in view of Fodor *et al.* (USPN 5,800,992).

According to the MPEP § 706.02 (j), to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The rejected claims recite a method that includes the following element: "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**".

For the reasons set forth above, Kutyavin *et al.* do not teach or suggest this element. The disclosure of Fodor *et al.* does not overcome the deficiency of Kutyavin *et al.* as Fodor *et al.* likewise do not teach or suggest this element, and, as such, these references cannot render the claims obvious.

At best, the combination of Kutyavin *et al.* and Fodor *et al.* suggest using oligonucletides that contain nucleotides with the modified bases disclosed by Kutyavin *et al.* in an array for detecting nucleic acid sequences in two or more collections, but without the element that the oligonucleotides "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**". This is *not* what is being claimed.

For the reasons set forth above, Kutyavin *et al.* in view of Fodor *et al.* do not render claims 5-6 and 26-28 obvious. Thus, the Applicants respectfully request the Examiner reconsider and withdraw this rejection over Kutyavin *et al.* in view Fodor *et al.*

Claims 1-4 and 25-29 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Laird *et al.* in view of Kutkyavin *et al.*

According to the MPEP § 706.02 (j), to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The rejected claims recite a method that includes the following element: "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**".

For the reasons set forth above, neither Laird *et al.* nor Kutyavin *et al.* teach or suggest this element, and, as such, these references cannot render the claims obvious. Also, for the reasons set forth above, there is no suggestion or motivation for combining the disclosures of Kutyavin *et al.* and Laird *et al.* and combining the disclosures of Kutyavin *et al.* and Laird *et al.* would render the prior art unsatisfactory for its intended purpose.

For these reasons, Laird *et al.* in view of Kutyavin *et al.* do not render claims 5-6 and 26-28 obvious. Thus, the Applicants respectfully request the Examiner reconsider and withdraw this rejection over Laird *et al.* in view Kutyavin *et al.*

Claims 5-6 and 26-28 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Laird *et al.* in view of Kutyavin *et al.* and in further view of Fodor *et al.*

According to the MPEP § 706.02 (j), to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The rejected claims recite a method that includes the following element: "**hybridizes under stringent hybridization conditions to a discrete region of a genome that contains a CpG that is, or is predicted to be, a target for a cellular methyltransferase**".

For the reasons set forth above, none of the three cited references teach or suggest this element, and, as such, these references cannot render the claims obvious. In addition, for the reasons set forth above, there is no suggestion or motivation for combining the disclosures of Kutyavin *et al.* and Laird *et al.*, and combining the disclosures of Kutyavin *et al.* and Laird *et al.* would render the prior art unsatisfactory for its intended purpose. The disclosure of Fodor et al. does not suggest or motivate the combination of Kutyavin *et al.* and Laird *et al.*

For these reasons, Laird *et al.* in view of Kutyavin *et al.* and in further view of Fodor *et al.* do not render claims 5-6 and 26-28 obvious. Thus, the Applicants respectfully request the Examiner reconsider and withdraw this rejection over Laird *et al.* in view Kutyavin *et al.*

CONCLUSION

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Mike Beck at (408) 553-3864.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10031482-1.

Respectfully submitted,
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